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European and U.S. officials mixed on future of loran

By Andrew Wood / February 2007

Few navigation systems have experienced the ups and downs of loran as they sought recognition. In December, a UK agency said the system is an essential back-up to GPS; the same month the FAA rejected it for the same purpose and an independent group of U.S. experts unanimously endorsed the system as a backup. To outside onlookers, the alternating acceptance/rejection/acceptance of the system must appear puzzling, a circumstance certainly not helped by the mysterious e-Loran term that nowadays creeps into discussions of the system.

What exactly is e-Loran? To most pilots, loran was a pre-GPS navaid that obtained its position from curving radio position lines transmitted from groups of stations–called "chains"–in widely separated parts of the nation. The accuracy was fairly good, but precipitation static could wipe it out, and on longer trips you either had to retune to different station combinations in the same chain or switch to another chain entirely. GPS, with its higher accuracy, all-weather performance and nationwide turn-on-and-forget-it technology, essentially ended the loran era.

But not quite. Just as equipment developers brought us home PCs and cellphones, loran engineers developed e-Loran (for enhanced loran). In this system receivers are no longer locked to a single local chain, but instead pick up every station within reception range, out to more than 1,000 miles, allowing, for example, the FAA's Technical Center personnel routinely to track 25 to 30 separate stations during flight tests in the continental U.S. Like GPS, therefore, e-Loran is an "all in view" system.

Also like GPS, its computer then selects the best of those stations for a fix, with accuracy approaching that of satnav. And along the way, the engineers also eliminated the precipitation static problem. Consequently, all three December decisions concerned e-Loran, not its 1980s predecessor.

In the UK, the government's marine authority solicited bids for e-Loran to tie into similar stations across the European mainland, to provide a widespread GPS backup. The authority noted that the threat to GNSS (which included GPS and Europe's Galileo satnav) from terrorists or criminal jamming "is credible, real and likely to have significant economic and financial costs."

The FAA's view, expressed informally to **AIN** before an official announcement was made, was different. Agency officials recognize that a GPS backup will be required for ADS-B–whose aircraft transmissions must include position data–but rejected e-Loran in favor of a reduced secondary (transponder interrogating) radar network. The implementation of ADS-B is usually seen as eliminating the need for secondary surveillance radars (SSRs), but the FAA plans to retain 150 of its current 300 SSRs after the nationwide ADS-B installation is complete between 2015 and 2018.

However, officials emphasize that over time, other solutions– either new concepts or current, not yet fully aviation qualified, systems such as e-Loran–could become backup candidates. In that case, their adoption could allow the total decommissioning of secondary radar, thereby saving the full $1 billion FAA Administrator Marion Blakey promised when she launched the ADS-B program last May.

While the official launch of ADS-B was a setback for the e-Loran community, optimism had returned by the end of December with the report that a top-level industry review team appointed by the Departments of Transportation and Homeland Security had unanimously recommended that loran stay on the air. The team was led by Professor Brad Parkinson of Stanford University who, in his previous USAF career, had become known as "the father of GPS."

Loran has been on navigation's death row since the late 1990s, but it has always been saved by last-minute annual reprieves from Congress. A decision on its future is expected by spring. December's endorsement of e-Loran by Europe and the experts' testimony to DOT and DHS, coupled with anticipated Congressional backing, gives advocates hope that it will regain its place in the inventory of future navigation systems. ■